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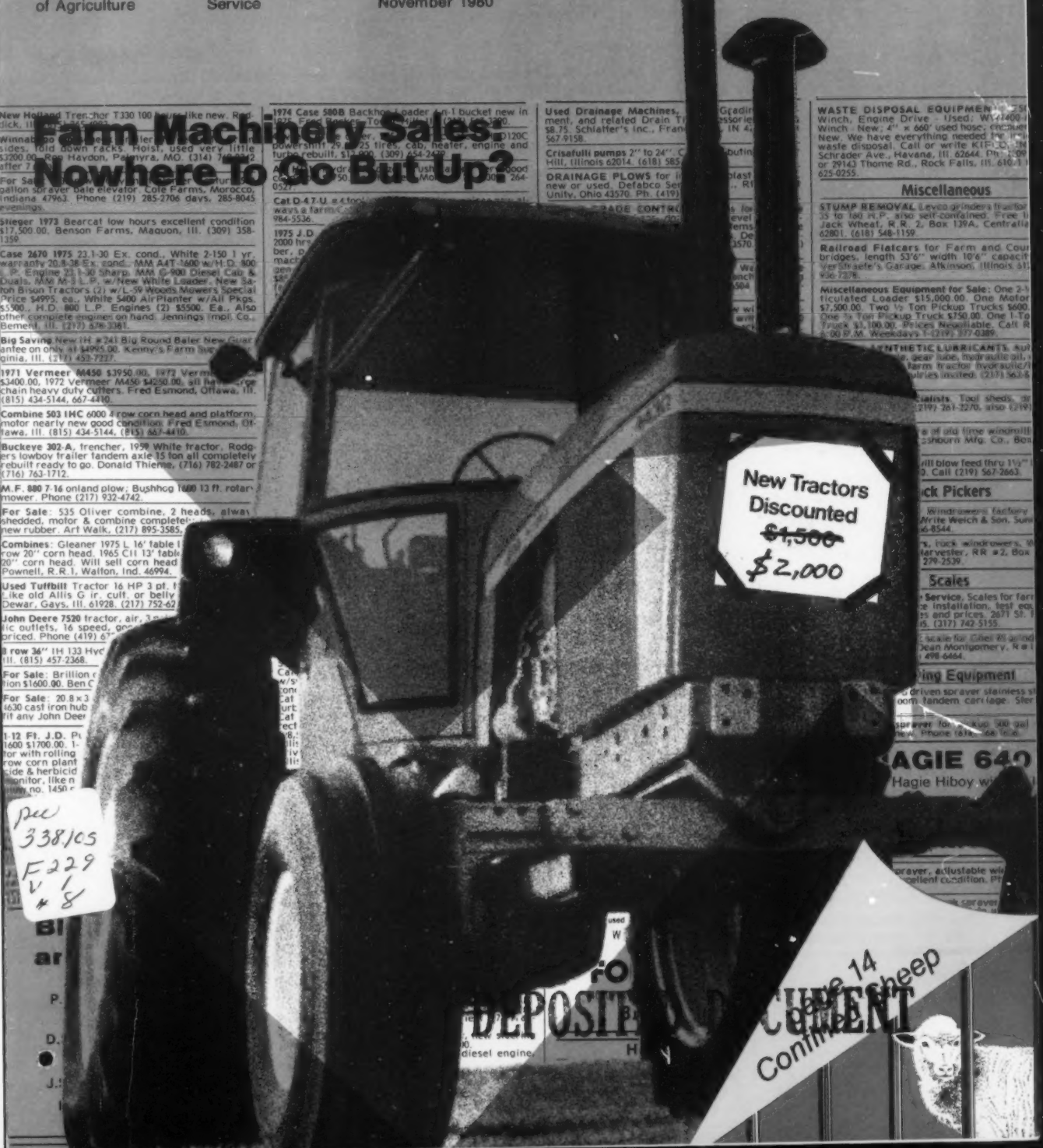
Farm Machinery Sales: Nowhere To Go But Up?



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Editor:
Eric Van Chantfort
(202) 447-8302

Contributors:
Deborah Takiff Smith
Barry Murray
Jane M. Ross
Lynn Wyvill

Executive Editor:
Daniel R. Williamson

Design and Layout:
Joan Bazemore
Carolyn Fletcher
Susan Yanero
Linda Zelder

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Perspectives

With the fall harvest all but complete in most grain, oilseed, and cotton states, many farmers are planning ahead for next spring with more optimism--and profitable options--than last year at this time.

However, while those whose fields escaped weather damage this season may be in a good position to finance 1981 plantings, many others will have to rely on low-yield disaster payments, past earnings, and extra credit.

What about credit? . . . Recent interest rate hikes have raised the specter of last spring. Not likely, say USDA economists. They add that tight money policies may keep rates edging up this fall and, perhaps, into early next year, but they don't expect a repeat of last spring's record high prime rate and severe credit crunch.

Meanwhile, world supply-demand prospects tighten . . . Grain production forecasts for the USSR, China, Australia, and several other countries were lowered in mid-October. At the same time, the Crop Reporting Board reduced U.S. crop forecasts: Corn to 6.47 bil. bushels, down 17% from last year; soybeans to 1.76 bil., down 23%; cotton to 11.6 mil. bales, down 21%. But even with smaller U.S. crops, our export prospects, for grain primarily, keep improving --and the new U.S.-China grain pact adds further luster.

Crop prices holding well above year-ago levels . . . Corn was up 50 cents a bushel from a year ago in mid-September, soybeans were up 90 cents, wheat up 10 cents. And these spreads may widen. USDA forecasters predict that 1980/81 season corn prices will average 65 cents to $1 higher than the $2.50 per bushel estimated for the season just ended; wheat 13 to 43 cents above 1979/80's $3.82 per bushel; and soybeans $1.10 to $3.60 higher than last season's $6.25.

Higher feed costs squeeze meat producers . . . But further price strength in store for livestock should help. Reduced pork and broiler production in the first half of 1981 will cut total meat supplies, despite some increase in beef output. So even cattle prices are expected to be much higher than a year-earlier next spring.

Getting the facts . . . Many wheat, hog, and cattle producers will be surveyed in coming weeks as USDA develops estimates of the 1981 winter wheat crop, hog numbers and farrowing plans, and the cattle inventory. All responses are voluntary and confidential. The wheat and hog figures will be published Dec. 23; the cattle inventory Jan. 30.

FARMLINE

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FEATURES

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Disappointing earnings and tight credit kept most farmers off new machinery lots early this year. Sales show some signs of bouncing back, but what's ahead for next year and how will rising energy costs affect the future of farm machinery?

Leasing Can Be A Better Buy 7

It can be cheaper than buying, as many farmers are finding when they look into leasing as an alternative to the high cost of new farm machinery.

Farm Exports Top All Forecasts 8

Ten months ago, no one was betting that U.S. agricultural exports would reach $40 billion in 1980, but forecasters were in for a few surprises. Here's what happened, and why the analysts are cautiously optimistic about the year ahead.

Barging Ahead in Transportation 10

For fuel efficiency and carrying capacity, the barge beats anything on wheels. Though barges still trail far behind railroads in farm products shipped, it's no wonder that U.S. waterways figure prominently in plans to upgrade the agricultural transportation system.

Confined Sheep Mean Fatter Flocks, Hungry Coyotes 14

By moving from the traditional open range to modern confinement, many sheep producers can protect their flocks and increase lamb production per ewe. Costs are higher, but the productivity payoff can be dramatic.

Pitfalls of Farmer Hedging 16

Bypassing the basis, neglecting the banker, sparing the spouse, and slipping into speculation—here's Allen Paul's guide on how to avoid some of the pitfalls which await the inexperienced commodity hedger.

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Farm Machinery Sales: Nowhere To Go But Up?

While farmers worried about coming up short on cash flow and financing early this year, tractor and farm equipment dealers were critically short on customers.

The farm machinery market is already showing some signs of bouncing back from the doldrums of the first half of the year when manufacturers had to close plants and lay off workers. However, dealers won't match last year's volume by a big margin.

Demand for farm machinery early this year was pinched by tight credit, high interest rates, and disappointing returns on crops and livestock. Farmers also took a wait-and-see attitude when grain sales to the Soviet Union were suspended.

Cost resistance may have been a factor too, as farm machinery prices climbed about 10 percent from last year.

Tractor sales declined about 25 percent from a year ago in the first half of 1980, says USDA economist Carl Vosloh, citing figures compiled by the Farm and Industrial Equipment Institute.

For 2-wheel-drive tractors over 100 horsepower, the drop was worse. About 25,000 rolled off the lots in the first half of 1980, down 33 percent from the 37,000 sold in first half 1979. Sales of other farm machines were also down: Combine sales were off 14 percent, baler sales off 30 percent, and forage harvester sales down 12 percent.

Signs of a Comeback

The first sign of a possible pickup in tractor sales came in May when volume for the month ran only 23 percent below the year-earlier rate. To dealers, that represented a big improvement. Until then, the decline from the year-ago volume was widening each month, and April's sales were down a sharp 47 percent.

Combine sales were off 14 percent, baler sales off 30 percent, and forage harvester sales down 12 percent.

In July, for the first time this year, tractor sales actually showed a year-to-year improvement. About 20 percent more tractors were sold that month than in July 1979.

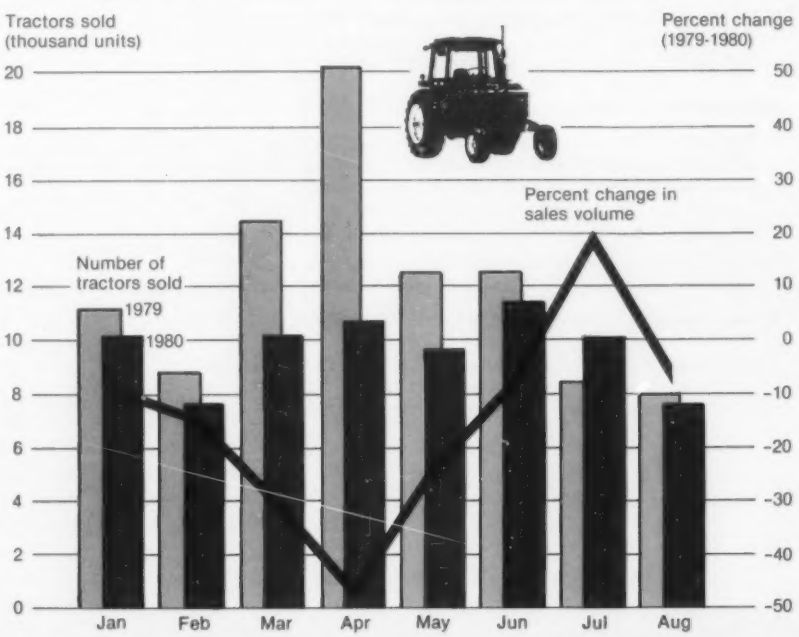
Although other machinery categories were still lagging and even tractor sales slipped back under 1979's volume in August, the market appeared stronger than before—especially as the harvest of small grains progressed.

The easing of interest rates and credit availability since mid-spring probably contributed to this comeback. Also, a sharp turnaround in farm prices gave many producers outside drought-damaged areas the expectation of a better cash flow in the year ahead, thus encouraging major capital expenditures.

"Farm equipment sales are very sensitive to farmers' real cash flow and their economic well-being," Vosloh says.

"The classic pattern is that in good times farmers upgrade equipment, getting a bigger and better tractor, and then buy or rent more land to capture the added production potential of the larger equipment. In a not so good year, they get by with the old equipment," he says.

After Tumbling Till April, Tractor Sales Pull Closer to Year-Ago Rates[1]



[1]Sales volume is measured against year-earlier rates rather than the volume of the preceding months because of the seasonality of sales.

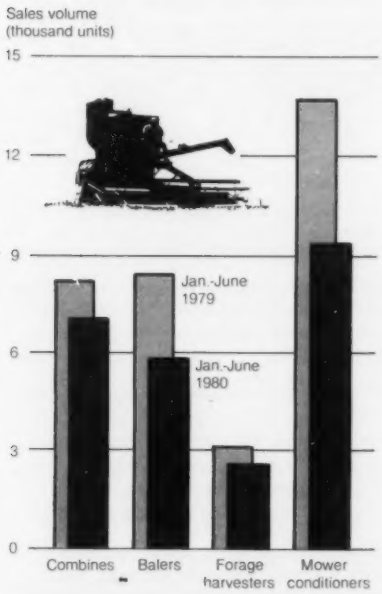
How Much Stretch?
Much of this year, many farmers apparently stretched the life of older equipment, hoping it would last through another season. They also leased more equipment, and there was a bigger market for used equipment, according to industry reports.

Will the dropoff in equipment sales affect farm productivity?

"In the short run, it will probably not have a significant effect, as farmers repair their machines and keep them running," says economist Leland Southard.

"You can stretch equipment somewhat, but if needed replacement is postponed longer, say for 1 or 2 years, productivity could deteriorate."

... Like Tractors, Most Farm Machinery Suffered Sagging First Half Sales



Farmers stretched the life of older equipment, hoping it would last another season.

Most observers don't expect this to happen, since sales have picked up and prospects for higher crop prices and relatively lower interest rates should affect the 1981 picture, Vosloh suggests.

"The machinery sales outlook next year should be brighter, and sales might approach the level of 1979," Vosloh says. There will probably be more acreage in production, since domestic and foreign demand for U.S. farm products continues strong. Also, some farmers who postponed buying equipment this year will have to buy next year.

Longer Term Prospects
The longer term prospects for equipment dealers seem secure. There are fewer hired farmworkers and their wages are higher, and many farmers prefer a big tractor with higher output per hour of labor. Large equipment that can do farm jobs quickly provides at least some protection against weather uncertainties.

At the same time, however, rising energy costs, as well as the growing use of less intensive tillage practices, may slow down the rate of machine sales growth, especially for tractors and certain types of implements, Vosloh says.

Reduced tillage techniques will be used increasingly to save fuel, conserve the soil, and reduce wear and tear on equipment. The type of machinery purchased may also be affected as farmers shift from conventional moldboard plows to minimum tillage equipment.

The amount of equipment on U.S. farms will keep declining into at least the middle 1980's. However, this will reflect continuing purchases of today's larger tractors that often do the job of two or more of the outdated machines they'll be replacing.

As older machines are replaced, the average size and horsepower of tractors on farms will continue to increase. However, equipment manufactured later this decade is not likely to change much in size from what is being built today.

Efficiency and Reliability
Equipment produced during the last several years approached the maximum size for transport on roads and highways as well as for maneuverability in farming operations. In the future, more emphasis will be placed on matching equipment to the job for increased efficiency, Vosloh says.

Both farmers and the government are pressing for engines that provide optimum power and fuel economy, and machinery manufacturers are trying to improve engine design to reduce fuel consumption.

More emphasis will be placed on redesign and new technology such as use of electronics and computer-aided remote control systems to improve machine operations.

Farmers are also seeking more reliable equipment, with speed receiving a lower priority. Repair costs have been increasing more rapidly than new machinery prices in recent years, and equipment breakdowns in critical periods can be costly.

Foreign Alternatives
Many farmers are finding increased equipment alternatives from Japanese and European manufacturers.

U.S. tractor imports have climbed from about 13,700 in 1970 to over 47,300 in 1979. They represented a mere 8 percent of U.S. tractor purchases in 1970, but in the first 6 months of 1980 more than half of all tractors sold in this country were made somewhere else.

Many of the imported tractors are comparatively small, and they appeal to small and part-time farmers in some parts of the country who need that size equipment, as well as to larger farmers who need a smaller horsepower unit to do specific tasks.

Japanese and European manufacturers offer a selection of small, four-wheel-drive machines and smaller diesel tractors that are more fuel-efficient than many of their American counterparts.

The foreign manufacturers have also shown that their machines are reliable and parts available. This has helped overcome some resistance by U.S. farmers to buying foreign-made equipment.

Many foreign-made tractors are produced by a U.S. affiliate in other countries, so these small imported tractors often intentionally complement the larger U.S.-made tractors.

Tracking the Tractor Fleet

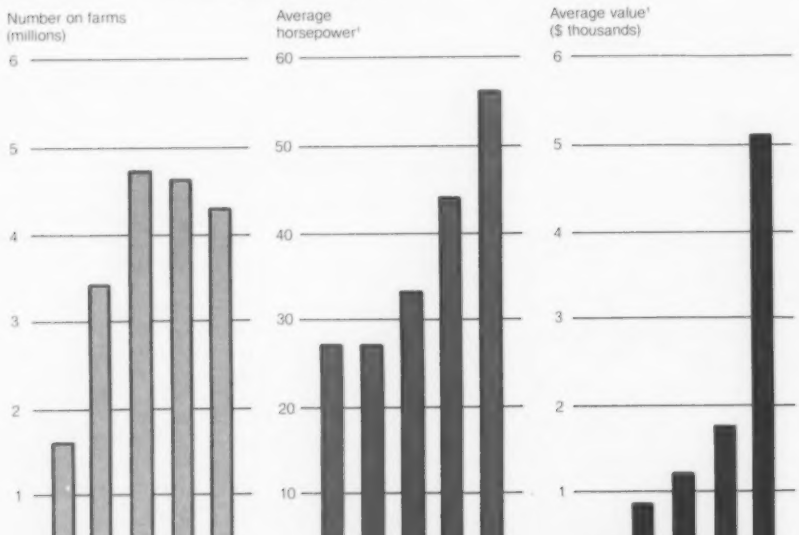
The tractors on U.S. farms are fewer, bigger, and more expensive than in years past.

At the beginning of 1980, the average tractor on U.S. farms was estimated at 57 horsepower, up from 44 hp. in 1970. For brand new tractors, average horsepower increased dramatically—from 69 hp. in 1971 to about 100 hp. in 1980.

In 1970, about three tractors in the 40-100 hp. range were sold for each tractor over 100 hp. By 1974, the shift to larger tractors was clear, and in 1979 more larger units were sold than smaller ones. Sales of diesel-powered tractors increased even more rapidly, rising about 35 percent in the 1970-79 period to make up over 95 percent of all tractor sales in 1979.

Buying larger equipment to replace smaller machines means there are fewer machines on U.S. farms. Between 1970 and 1980, the number of tractors on farms decreased about 7 percent.

U.S. Tractors: Fewer, Bigger, More Expensive



[1]Average horsepower and value of tractors of all ages on U.S. farms for year indicated.

Rising Costs

Economists expect further reductions. One reason is the high price of maintenance and upkeep. Operating expenses for farm equipment and motor vehicles add to an impressive total. Farmers spent $6.3 billion for fuel and oil to operate their machinery in 1979, and they paid $5.7 billion for repairs.

Prices paid by farmers for farm equipment and machinery have increased about 150 percent in the last 10 years. These price increases represent rising manufacturing costs as well as the costs of technology and engineering improvements in the newer units.

For example, a pickup baler that cost $2,400 in 1970 now costs $6,090, an increase of 154 percent. The price of a large, self-propelled combine rose 300 percent in the decade, from $16,500 in 1970 to $66,500 in 1980.

Tractors and other farm machinery are a major expenditure item, the second largest capital investment for crop farmers after land and buildings.

Leasing Can Be A Better Buy

Farm equipment leasing has become a growth industry. Annual revenues from leasing and custom services have already passed the $2-billion mark, according to USDA economist Lloyd Biser.

Farmers are turning more to leasing as equipment costs have risen to account for a quarter of total production costs, up from less than a fifth just 10 years ago.

These rising costs are squeezing all farmers—especially those who started farming in the last few years and those who borrowed capital recently to expand. And with interest on credit still at double-digit rates, some farmers are being forced to "trade down" machinery, or rent, to reduce operating costs.

"The problem," says Biser, "is most serious for the young, the new, and the marginal farmer who cannot meet production costs—much less make payments on new farm machinery."

Enter Leasing

The money farmers spent to lease or hire custom machinery added up to 10 percent of the total expenditures for farm machinery in 1977, according to Biser. In 1967, only 7 percent of their machinery expenses went for leasing.

Some farm machinery dealers lease, but more leasing today is done by farmer cooperatives and production credit associations (PCA's).

Despite the $2 billion in total leasing revenues, average returns to lessors are modest. Most PCA and cooperative leasing operations surveyed by Biser reported a return on investment in machinery of 3 percent.

Figures for private firms were not available, but it is unlikely that they would settle for such a small return, according to Biser. PCA's and cooperatives lease mainly as a service to members.

Before deciding to start a leasing operation and buying the machinery for it, there are two vital considerations: How near and how willing are the potential customers?

A survey of PCA members indicated that 12 percent said they would lease equipment if it were readily available. The PCA's themselves projected that successful leasing operations require about a 10-percent participation rate by members.

While the present rate is less overall, the idea is spreading and the future seems to indicate substantial further growth of leasing—if for no other reason than inflationary costs of buying and owning machinery.

Rates and Responsibilities

PCA and cooperatives lessors make rate adjustments for some members, generally those who take better care of the equipment. Rates vary with the size and kind of equipment used and the hours spent using it. Rates also vary according to geography.

A California company that has been leasing successfully for more than 10 years charges the same hourly rate for all, but reduces its rate as hours of use increase. Like the PCA's and cooperatives, it holds the farmer responsible for transportation costs, insurance, and damage due to neglect. But it is responsible for downtime and must repair the machinery or replace it within a given time.

In general, the less machinery is used, the more economical it can be to lease rather than buy.

Biser's comparison of leasing costs versus ownership costs for a new tractor shows that leasing is frequently less expensive. Of course, much depends on the type of equipment, the horsepower, the hours of use, and the distance from the leasing service.

For example, the accompanying table shows that if a small (40 hp) tractor is operated 125 hours a year, it costs about $16 per hour to operate if owned but only $8 per hour if leased at the listed rates.

On the other end of the scale, if the same small tractor is used 700 hours a year, it costs $2.67 per hour if owned but $5 per hour if leased. In general, the less such machinery is used, the more economical it can be for the farmer to lease rather than buy new equipment.

New Tractor Ownership Versus Leasing Costs

Tractor horsepower	Annual hours of use, 1977							
	125		250		500		700	
	Own[1]	Lease[2]	Own	Lease	Own	Lease	Own	Lease
	dollars							
40	16.00	8.00	8.00	7.00	4.00	5.50	2.67	5.00
60	24.00	9.00	12.00	8.00	6.00	6.50	4.00	6.00
80	30.00	10.00	15.00	9.00	7.50	7.50	5.00	7.00
100	44.00	12.0	22.00	10.00	11.00	8.50	7.33	8.00
120	54.00	14.00	27.00	12.00	13.50	10.50	9.00	9.75
160	60.00	17.00	30.00	15.00	15.00	13.50	10.00	12.50
200	80.00	20.00	40.00	18.00	20.00	17.00	13.33	15.50

[1] Ownership costs include depreciation, interest, taxes, and insurance. [2] Average of leasing rates charged by PCA's and supply cooperative dealers.

Farm Exports Top All Forecasts

Ten months ago, no one would have bet that the value of U.S. agricultural exports would reach a record $40 billion in 1980, according to USDA trade analyst Steve Milmoe.

"We knew export sales would set another record. But the boycott of U.S. goods by Iran—a half-billion dollar farm market in 1979—and the partial suspension of trade with the Soviets were pessimistic signs," Milmoe says.

So, last February, USDA forecasters trimmed $1 billion off expected 1980 export sales—previously pegged at $38 billion.

Instead, sales soared past the $38-billion mark, reaching an estimated $40 billion for the 1980 fiscal year, which ended September 30. That's a 25-percent increase from 1979's $32 billion.

At the same time, U.S. export volume rose about 18 percent to 162 million metric tons.

The windfall in sales boosted the U.S. agricultural trade surplus (the value of farm goods exported minus the value imported) from 1979's $15.8 billion to a record $22.5 billion.

Shifting Markets Behind Surge

What was behind the 25-million-ton, $8 billion surge in U.S. farm exports?

Unusually heavy shipments of grains, oilseeds, and cotton early in the year did not taper off as expected, Milmoe says. Shipments of all three remained strong month after month.

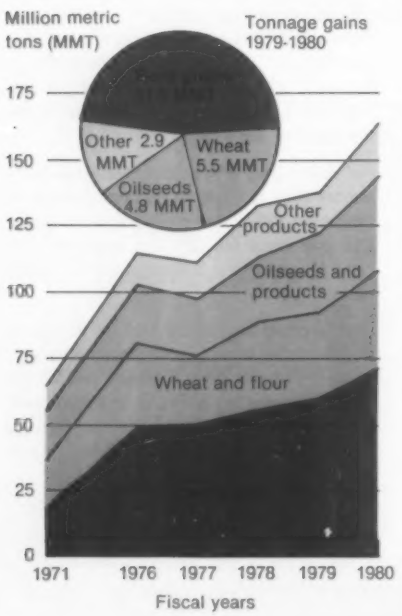
Part of the reason was a shift in trade patterns. As the Soviets and Iranians drew on limited supplies of other exporters, some new markets were opened to the U.S.

More important, however, were disappointing harvests in several other nations and the availability of large U.S. supplies. In addition, when weather damaged new-crop prospects in the U.S., Canada, China, and elsewhere, that further spurred demand and raised prices. Higher 1980 prices for many products—soybeans a major exception—added more than $2 billion to the U.S. sales increase.

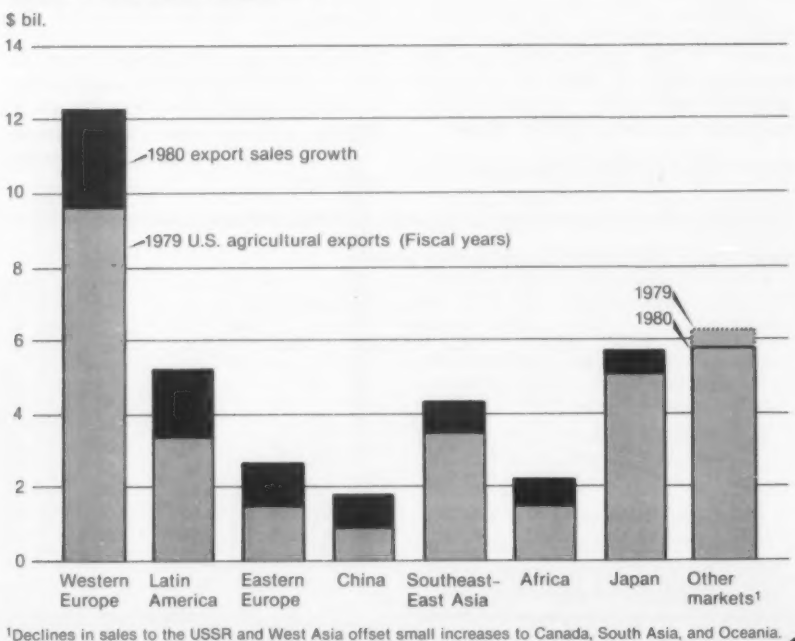
Cotton Big Surprise

Cotton was the biggest surprise, with the most dramatic growth over year-ago levels. Volume was up about 50 percent, while sharply higher prices boosted value nearly 60 percent. This increase was mainly the result of increasing demand for textiles and poor crops in other

U.S. Export Volume Jumps 25 Million Tons—Third Consecutive Increase



Multitude of Markets Contribute to $8 Billion Growth in U.S. Farm Product Sales



[1]Declines in sales to the USSR and West Asia offset small increases to Canada, South Asia, and Oceania.

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cotton-producing nations, such as the USSR and Turkey.

Around 9.2 million 480-lb. bales were shipped overseas in the year ending September 30, compared with 6.2 million in 1979. China, the leading purchaser, took nearly 2.3 million bales, more than during the last 2 years combined, Milmoe says.

At the same time, demand for U.S. cotton in the traditionally large markets of Japan and Korea also rose.

Overall, cotton exports added more than $3 billion to U.S. coffers, compared with less than $2 billion in 1979.

Argentina's Role in Grains

U.S. feed and food grain sales were up a third from 1979, totaling more than $17 billion. The unprecedented demand for feed grains—which accounted for half that value—partly reflected poor corn and sorghum crops in Argentina, a major exporter, as well as Argentine sales to the Russians.

As a result, many of Argentina's traditional customers turned to the U.S. Spain, for instance, boosted imports of U.S. feed grains to an estimated 4.7 million metric tons in 1980, compared with 1.8 million a year earlier.

Hot, dry weather in Mexico also helped U.S. feed grain exports. Our exports to Mexico grew from 1.8 million tons in 1979 to 7.1 million in 1980. For all of Latin America, U.S. feed grain exports more than doubled in volume and almost tripled in value.

Other areas which furnished much of the growth in demand for U.S. feed grains were Japan and Eastern Europe.

China Top Wheat Buyer

U.S. wheat exports reached 37 million tons, a 15-percent increase over 1979's level. Argentina also played a role here by diverting most of its exportable wheat crop to the USSR—after the U.S. and some other exporting nations suspended sales to the Soviets.

This helped boost U.S. wheat shipments to China and some South American countries such as Chile, Brazil, Peru, and Colombia. For the first time, China became our top single-country wheat market, taking 4.2 million metric tons.

In another dramatic development, the nations of Eastern Europe imported nearly 2.9 million tons of U.S. wheat, more than triple their 1979 volume. This total exceeded, for the first time, the imports of U.S. wheat by the European Community nations of Western Europe.

Exports of U.S. soybeans, while not surging like cotton and grains, also rose. Total shipments in fiscal 1980 reached around 23.7 million metric tons, contrasted with 20.2 million in 1979.

Odds Favor Another Big Year

Although volume may level off, price rises could boost U.S. agricultural export sales to as high as $45 billion in fiscal 1981, which began October 1.

Total export volume is expected to be only slightly above 1980's 162 million tons. Feed grain shipments—at around 71 million tons—may not rise, though wheat exports could increase 2 million tons to just over 39 million.

Small gains are also forecast for rice and tobacco. Soybean and cotton volume is expected to decline.

Limited Competition

U.S. feed grain exports to the USSR may drop to about 5 million metric tons from 1980's 6.0 million, but reduced shipments there will be offset by increased sales to Mexico, Canada, China, and South Korea.

Competition from other major feed grain exporters will be limited early in the year. Canada will be hindered by reduced stocks and small crops. Argentina's supplies will be tight until next spring's harvest.

Competitors' feed grain supplies will be limited early in the year.

With world wheat production projected to rise sharply in fiscal 1981, due mainly to improved harvests in the USSR and Eastern Europe, there is little room for trade expansion. However, because of production shortfalls in Canada, Australia, and Argentina, the U.S. should capture a slight increase in trade.

Also, exports of U.S. wheat to China are expected to increase further, following last year's emergence of that country as a major wheat market. China had a serious production shortfall last year, and this year's crop has also suffered some weather damage.

Cotton and Soybeans

U.S. cotton exports are forecast to drop as much as 30 percent in fiscal 1981, due to economic slowdown in the major cotton importing countries. Also, U.S. exportable supplies will be limited because of a weather-reduced crop.

On the soybean front, U.S. exports are expected to decline 4 percent in fiscal 1981, due to higher prices and strong competition from Brazil. U.S. production is expected to decline 19 percent, but total supplies are only slightly lower due to large stocks.

Barging Ahead in Transportation

One barge load of soybeans moving down the Mississippi carries the harvest of more than 1,500 acres—50,000 bushels—the equivalent of about 15 railcar loads or 59 truck loads.

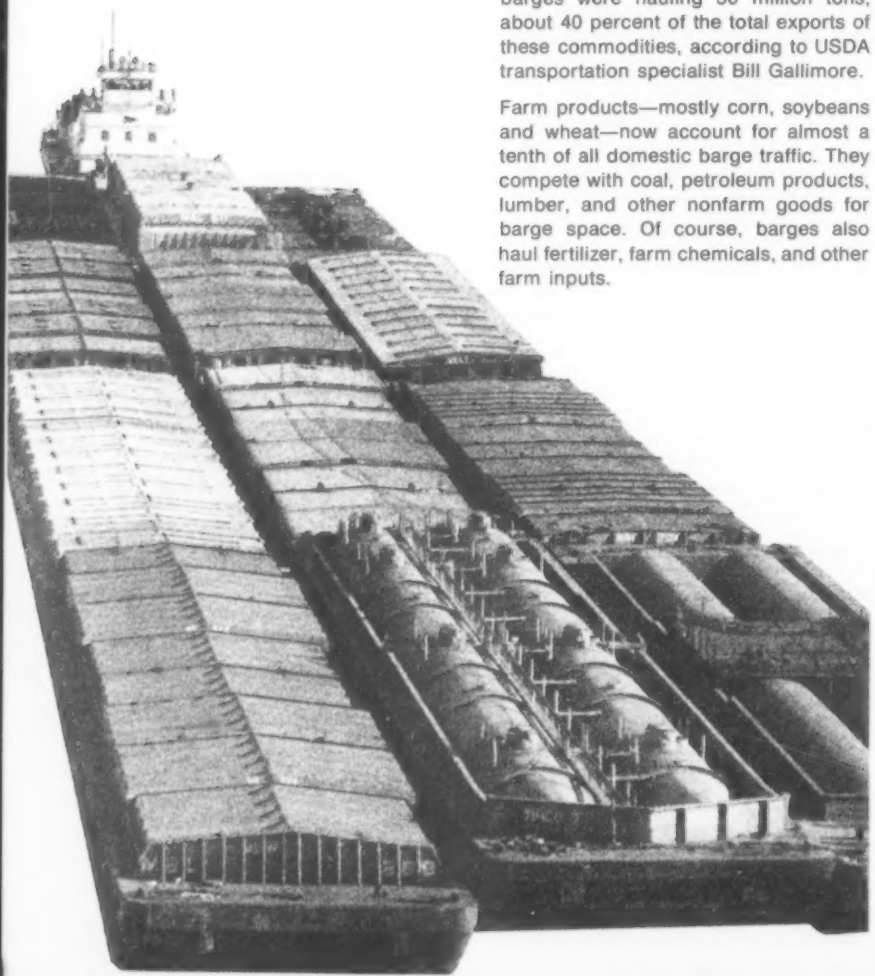
With thousands of barges hauling corn, wheat, and soybeans to Gulf and ocean ports each year, it's no wonder that U.S. waterways figure prominently in plans to upgrade the agricultural transportation system.

Barges still trail far behind railroads in the volume of farm products shipped, but inland waterways have carried an increasingly heavy load in domestic commerce over the past two decades.

Farm products account for almost a tenth of all domestic barge traffic.

In 1960, 14 million tons of grains and oilseeds were barge shipped. By 1979, barges were hauling 50 million tons, about 40 percent of the total exports of these commodities, according to USDA transportation specialist Bill Gallimore.

Farm products—mostly corn, soybeans and wheat—now account for almost a tenth of all domestic barge traffic. They compete with coal, petroleum products, lumber, and other nonfarm goods for barge space. Of course, barges also haul fertilizer, farm chemicals, and other farm inputs.



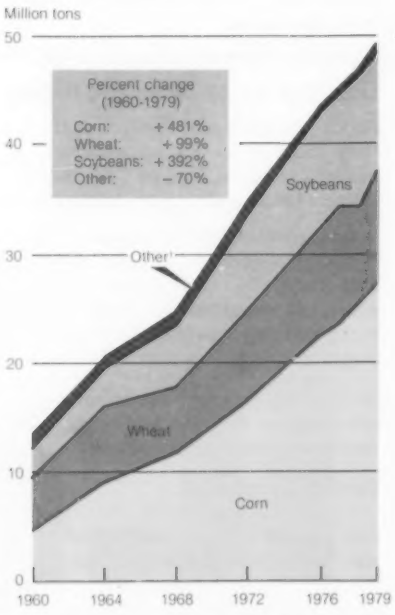
Expanding Role

Since the early 19th century, the inland waterways have played a major role in domestic commerce and, in the last 50 years, their role has been expanding.

While total ton-miles (tons times miles carried) of all freight traffic increased about 75 percent between 1929 and 1978, inland waterway traffic escalated its load from 8 billion to 291 billion ton-miles. The gain increased waterways' share of total ton-miles of domestic transportation from just over 1 percent to almost 12 percent.

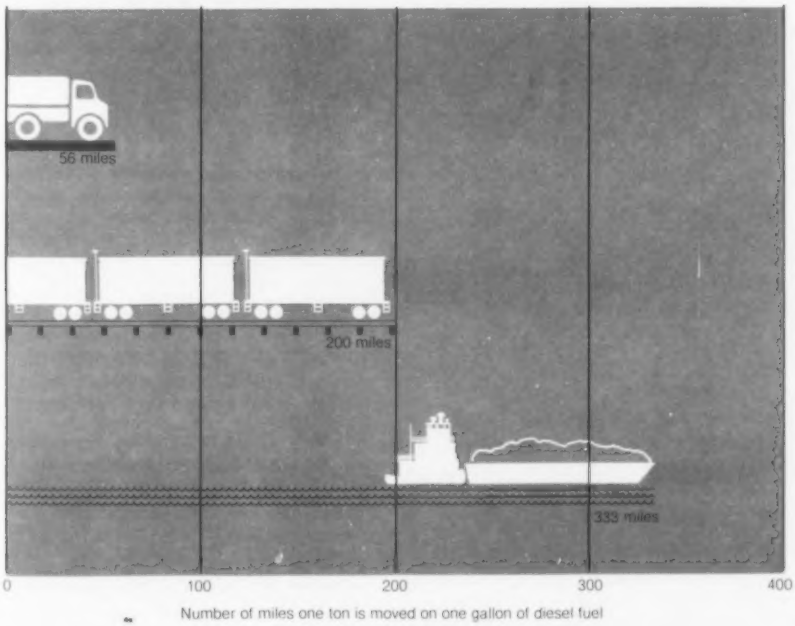
Cost is one major reason for growing barge popularity. Cargo is carried on the waterways at an average cost of slightly over a half cent per ton per mile, cheaper than anything on wheels.

Barges Carry Increasingly Heavy Farm Product Load



¹Includes sorghum grains, oats, barley, and rye.

Fuel Efficiency Helps Keep Barges Cheaper Than Anything on Wheels



Source: U.S. Department of Energy, *Transportation Energy Conservation Book* (Feb., 1979)

The fuel efficiency of barges helps keep their costs down. On 1 gallon of diesel fuel, a barge can move around 333 ton-miles, compared with railroads' average 200 ton-miles per gallon.

Improved waterway facilities, the sharp rise in grain exports, and the concentration of grain production in areas close to waterways have also contributed to the growth in agricultural barge traffic.

Rivers and Canals

The U.S. waterway system boasts more than 25,500 miles of commercially navigable inland rivers and canals. The Mississippi-Missouri-Ohio River system accounts for 35 percent of total inland waterway mileage.

With almost two-thirds of its 9,000 miles at the standard operating depth of 9 feet or more, the Mississippi system is the most intensively used domestic waterway. Most of the grain it carries is destined for Gulf of Mexico ports.

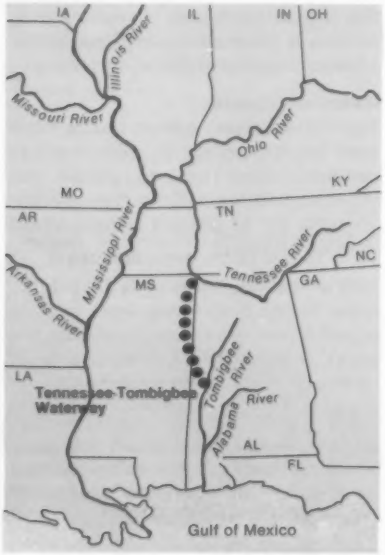
Second only to the Mississippi system in length is the Columbia-Snake inland waterway system consisting of 700 navigable miles from Lewiston, Idaho, to Portland, Oregon. It is the major export waterway outlet for grain, particularly wheat, on the Pacific Coast.

With a navigation season of 12 months on the Columbia River (where wheat is the only major agricultural commodity transported), a record 2.75 million tons of grain were moved in 1975; by 1977, it was 3.4 million tons.

A 14-foot channel depth makes the Columbia-Snake the deepest inland river navigation system in the U.S. Barges that can carry up to 3,200 tons are regularly assembled into tows, compared with the 1,500-ton capacity barges common to the Mississippi River system.

The 232-mile Tennessee-Tombigbee waterway, connecting the heartland of America via the Tennessee River with

the Gulf of Mexico, should improve barge movement when the massive dredging project is completed in 1986. The project is, however, of greater interest to coal shippers than for grain.



By cutting off the Tennessee-Mississippi River route west of the planned waterway and providing a relatively straight route to Mobile, Alabama, and the Gulf, the ice-free route will provide a welcome alternative to shippers, reducing the distance their barges now travel as much as 800 miles.

Bigger Barges, Stronger Tows

In addition to such waterway improvements, the towboats and barges that haul the grain are growing in capacity and horsepower.

Total capacity for dry cargo barges and scows in the U.S. increased almost 120 percent from 1963-1976. The average capacity increased about 26 percent, from 939 tons in 1963 to 1,181 in 1976. During those years, total net capacity of tank barges grew 113 percent.

In each of the last 2 years, 1,000 new covered barges, the type used for grain shipments, were added in the waterway system, according to the American Waterways Operators, Inc. This year, however, barge builders report a decline in orders that may reflect recession or possibly the end of an expansion cycle.

While the number of towboats and tugboats has gradually decreased since 1963, the total net horsepower has increased almost 110 percent. New boats in the 5,000-6,000 horsepower range can push a chain of barges carrying from 30,000 to 50,000 tons.

For example, a tow of 35 barges can transport about the same volume of cargo as three 100-car unit trains, 1,440 average semi-tractor trailers, or a bulk ship in the 30,000-39,999 gross ton range.

Taxes and Improvements

Factors that may affect the growth of barge transportation include the new waterway users' tax, begun in October, levied so shippers must pay higher barge rates to offset the carriers' added costs. These costs will presumably affect grain prices paid to farmers. User taxes are 4 cents per gallon for fuel, rising to 10 cents per gallon by 1985.

In addition, the current capacity of Locks and Dam 26 at Alton, Ill., the junction of the Mississippi and Illinois Rivers, is a major obstacle to increased water shipments from the upper midwest.

Congress has authorized construction of a new 120-foot lock to alleviate such problems as the average 20-hour wait experienced by towboat captains in passing through the locks. The work isn't expected to be completed until 1989, although the lock will be open to navigation in 1987.

Lock delays on the waterway system will continue to plague the delivery of grain, at least until improvements to the lock systems are completed.

Meanwhile, although heavy demand for barge service has strained capacity in some regions, available service appears adequate to handle this fall's smaller harvest.

All the Way to Shawneetown

Hard upon the beech oar!
She moves too slow!
All the way to Shawneetown,
Long time ago.

(Song of bargemen: 19th century)

Today's barge operators are experts at maritime navigation. Not so 150 years ago when the earliest bargemen were farmers seeking to market their produce.

On homemade craft, these 19th century boatmen carried pine boards, cotton, apples, Kentucky hemp, and Missouri lead to downriver settlers.

In the spring, crews of 8 to 15 boatmen could make the 1,950-mile descent from Pittsburgh to New Orleans in 4 to 6 weeks. At the destination, the flatbottomed boats—unable to make the return journey upriver—were broken up to sell as lumber.

The advent of steamboats shattered previous river travel time and the bargemen's seasonal occupation. In 1817, a steamboat took only 41 days to make the round trip between Louisville and New Orleans, proving the supremacy of steam over barge poles and oars.

Agricultural Roundup

ESCS Loses "C" to New Co-op Agency

ESCS lost its "C" on October 1 when USDA established a separate agency to manage the department's activities in support of farmer cooperatives.

The new Agricultural Cooperative Service assumed most of the farmer cooperative duties formerly handled by ESCS (Economics, Statistics, and Cooperatives Service).

At the same time, ESCS, which publishes *FARMLINE* magazine, was renamed the Economics and Statistics Service (ESS).

In announcing the change, Agriculture Secretary Bob Bergland said farmer cooperatives help their members compete in the marketplace. The new unit, he said, would give greater visibility to USDA's policy of providing support to family farmers and their cooperatives.

The Agricultural Cooperatives Service will provide research and technical and educational assistance to help farmer cooperatives operate efficiently.

To avoid conflicts of interest in the new cooperative agency, ESS retains some responsibilities for research on cooperative enterprises. Its other duties in the economics and statistics areas are unchanged.

The Economics unit of ESS produces and publishes research and analysis on the production and marketing of major farm commodities; foreign agriculture and trade; the use, conservation, and development of natural resources; rural population, employment, and housing trends; and the performance of the agricultural industry.

ESS' Statistics unit and its Crop Reporting Board collect and publish the official USDA estimates on crops, livestock, prices, and farm labor.

Hosting the China Team

Twelve statisticians and economists from the People's Republic of China recently took a first-hand look at U.S. agriculture.

The aim of their 3-week August tour—reciprocated by an October visit to China by USDA officials—was to learn about the organization and structure of U.S. agriculture, the process of economic planning in setting farm policy, and the collection and use of agricultural statistics.

Special briefings at USDA's Washington, D.C., headquarters included a preview of the analytical process behind a wheat set-aside decision, a look at survey sampling methods, and an inside view of how monthly crop production estimates are prepared.

Other meetings were held at state agriculture departments, universities, agribusinesses, and with individual farmers. This was to help the Chinese team understand the role of local government, the academic community, the food and fiber industry, and producers themselves in the U.S. agricultural system.

For young economist Wang Weisi, a highlight was meeting a Missouri farmer about his age who owns a 600-hog operation. Wang was impressed that the farmer chose hog farming as his business despite the high cost and hard work.

Wang Chuansheng of the China delegation looks over Boone County, Missouri, cornfield with USDA's Bill Kibler.

To statistician Ni Xinhang, the intricacies of U.S. farm statistics—both the collection at the farm as well as tabulation and summarization—were only booklearning before the visit. But during his short stay, the technical methods became clearer.

"Facts from government research get right to the farmer," Ni noted. He was especially impressed by the agricultural statistics system that makes this information relay possible.

What made the strongest impression on the entire delegation?

"A better understanding of the U.S. policymaking process," answers USDA economist Charles Liu, an interpreter for the group. China enforces policy through provincial, county, and commune government, Liu explains. So the delegation was surprised to see U.S. farmers voluntarily choosing whether to participate in loan or price support programs.

Bill Kibler, head statistician for USDA's Economics and Statistics Service, accompanied the delegation on its cross-country trip. The visitors, he notes, took home USDA materials that "will serve as references and provide ideas on ways of collecting statistics and doing economic analysis."

With China now at the threshold of introducing data processing, the visitors will also be able to use their new knowledge from the American experience in this area, Kibler adds.

In its reciprocal visit, the USDA team will study China's agricultural system and the process of planning farm policy. Meetings are scheduled at research institutes and province offices.

Exchanges of agricultural teams originated with the Science and Technology Cooperation Agreement between the U.S. and China in January 1979.

Confined Sheep Mean Fatter Flocks, Hungry Coyotes

By moving from the 19th century open range to 20th century confinement—and adding other innovations—many sheep producers could boost their productivity and profits.

That's the conclusion of USDA economist Virden Harrison of the meat animal research center at Clay Center, Nebr.

He adds that the high investment costs of a confinement facility and an intensive production system also mean larger risks for producers. However, the potential benefits may prove irresistible to many, especially when the current recession abates and the demand for red meat picks up again, he says.

Total confinement production systems are already used by a few commercial producers, but they're a far cry from the typical pattern in the industry.

"Most sheep are raised in mountain pastures, on open ranges, or kept in small farm flocks throughout the country," Harrison notes.

"They don't get much to supplement their forage, and they usually lamb unobserved on pasture with no protection from the elements." Predators and harsh conditions take an estimated 23 out of every 100 lambs before weaning.

In many cases, more intensive management and modern technology may be the answer to protecting flocks and increasing lamb production per ewe, Harrison says.

Out-of-Season Mating

Harrison's intensive production program would have these basics:

- Specially formulated feed with low levels of antibiotics to ensure better health, weight gain, and reproduction. Newborn lambs and pregnant ewes would be fed the proper mix of nutrients to meet their special requirements.
- Intensive genetic selection techniques to produce animals with desirable commercial characteristics, such as faster weight gain, earlier maturity and breeding, more twins and triplets, and more frequent breeding. Artificial insemination and closely controlled mating could be used to exploit the large differences among breeds in reproductive and performance traits.
- Hormones and chemicals to supplement the sheep's genetic potential. Treatments may enhance out-of-season mating, synchronize breeding and lambing, improve ram fertility, and induce multiple ovulations, daytime or early births, and early puberty.

Confined Sheep

To adopt these techniques and reap the benefits—such as twice-a-year lambing—sheep producers must go to a far more controlled operation than the traditional systems most now use.

A few producers have already adopted the total confinement system which allows much better control over disease and rations and reduces losses to predators and exposure.

Enclosed, environmentally controlled buildings house breeding, lambing, and special treatments of ewes. Lambs are fed and finished in an outdoor feedlot with a complete ration. Pasture is available only to ewes not undergoing special treatment.

Other producers have opted for semi-confinement which carries out special treatments in open-front buildings. Lambs are finished in feedlots with a complete ration.

Higher Costs, Bigger Payoff

Both confinement systems require large capital outlays, skilled and attentive managers, and a prolific flock of ewes and rams. The average investment per ewe may be nearly 4½ times greater than under traditional open-range production.

But the productivity payoff can be considerable. Harrison estimates that these innovations, particularly twice-a-year lambing, could help a producer raise over 3,000 lambs for sale a year from a flock of 1,000 ewes. In a typical range

Confinement Systems Offer Big Productivity Bonuses
More lambs per ewe; fewer death losses

	Total confinement	Semi-confinement	Range with lambing shelter	Range with no shelter
		number		
Lambing frequency per year	2[1]	1.5[2]	1	1
Ewes in flock	1,000	1,000	1,000	1,000
Ewes lambing	900	950	930	900
Lambs born live per ewe lambing per year	4	2.93	1.4	1.3
Lambs born live per year	3,600	2,780	1,302	1,170
Lambs weaned per year	3,420	2,502	1,016	819
Lambs raised per year	3,386	2,452	965	753
Female lambs entering breeding flock[3]	330	300	250	250
Lambs for sale per year	3,056	2,152	715	503

[1] Twice-a-year lambing per ewe. [2] Three lambings in 2 years per ewe. [3] Higher culling rates for ewes are assumed under intensive systems due to increased lambing frequency.

production system, 1,000 ewes produce an average of about 500 lambs for sale.

However, this doesn't mean that confinement facilities are suitable for all producers.

Western ranges are not easily adaptable to confinement operations. It is inexpensive to use this land for grazing, and present production methods can offer good profits. But in the midwest, where land is at a premium, the new production systems may be a better alternative for many producers.

Reviving a Taste for Lamb

To adopt more intensive production systems, sheep producers will have to see a long-term profit potential to offset the much higher investment costs and increased financial risk.

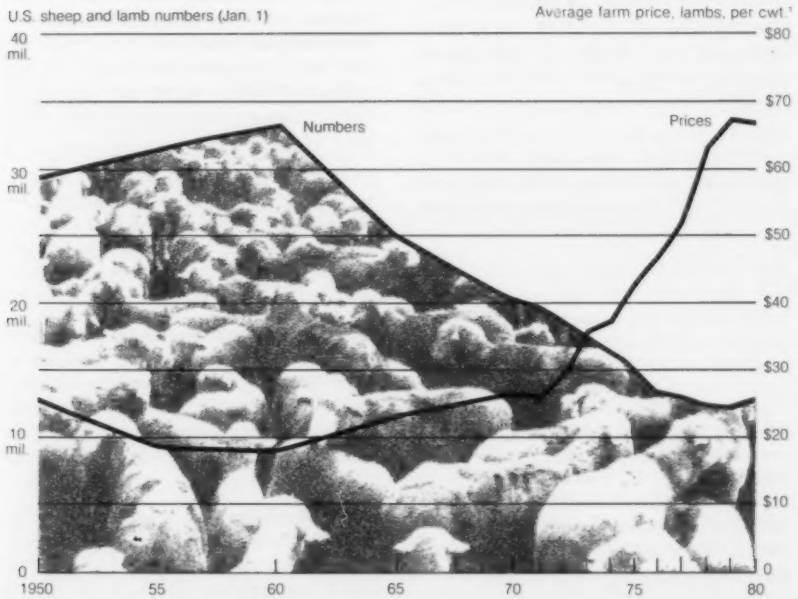
While there's a fair case for optimism on this score, the signs are mixed.

According to a recent USDA study, producers' net returns increased slightly in 1978, but declined last year as production cost rises more than offset higher prices.

Net returns are also expected to drop this year, partly because of weaker lamb prices. However, this is largely related to the large supplies of competing meats in the first half of 1980 which held down meat prices.

Sheep and lamb prices rose steadily between 1960 and 1979, but the upward trend accompanied a steady decline in sheep numbers. The inventory dropped from 1960's peak of 33 million to January 1979's 12.2 million, and the average American's consumption of lamb and mutton was sheared by more than two-thirds—from 5.2 to 1.6 pounds per person.

Sheep Herd May Be Starting Comeback Trail After 20 Years of Dwindling Numbers, Rising Prices



[1]All prices are annual averages, except for 1980 which is mid-July price.

Gambling on a Comeback

A gradual, widespread adoption of intensive production techniques could bring a slow but steady rise in sheep numbers—especially in the midwest—and an increase in lamb production. So a critical question is whether consumers' demand for lamb and mutton is resilient enough to support prices if slaughter begins a steady increase.

Sheep owners who decide to invest in expensive production facilities to enlarge their flocks will be gambling that any general expansion will be gradual and will spur a comeback in demand.

USDA economist Virden Harrison says the odds will be in their favor if they plan carefully. A gradual expansion in sheep numbers, as producers modernize facilities and adopt more intensive management systems, could boost the dwindling number of slaughter plants and help counter lamb's growing image as a specialty meat. If that happened, producers would likely see higher net returns, he says.

In fact, a limited expansion may already be underway. USDA's inventory this past January showed sheep numbers had increased 2 percent during 1979, and the July report on the nation's lamb crop showed the first year-to-year gain—up 3 percent—in 20 years.

Pitfalls of Farmer Hedging

This is the fourth article in a special FARMLINE series begun last July to provide more information about futures markets and how they work.

Although a good understanding of futures markets and their use can prove valuable, this series is not intended to recommend hedging as part of your marketing strategy. That's a decision only you can make.

Commodity hedging is not something to be entered into lightly, without extensive study and preparation, says USDA economist Allen Paul.

"Farmers who make the decision to hedge without considering the risks, along with the benefits, have already made their first mistake," he says.

As a guide for inexperienced hedgers, here's Paul's list of some major pitfalls into which farmers have fallen in the past:

Pitfall: Bypassing the Basis
The first step in using futures markets effectively is to study your local basis—the difference between the futures market price for a selected month and your local spot market price.

Without knowing your local basis and how it typically behaves, you have no way of knowing whether the price offer by the futures market is attractive. Basis is the beginning (see August 1980 *FARMLINE*).

Pitfall: Slipping Into Speculation
Countless stories tell of farmers who "lost big money" in hedging programs. All too often, it turns out that the farmer who lost money had gone beyond a safe hedge into a risky speculation.

Hedging is a temporary substitute for a cash transaction planned later for the physical commodity—a grain farmer selling the crop, a feedlot operator buying feed or feeder cattle, or a hog producer selling hogs.

No one knows for certain where the markets are going or when.

If a particular transaction is not clearly a hedge, then it should be recognized as speculation.

When you hedge, the odds are in your favor if you understand the futures market, have a good fix on your production costs, and lock in prices that will provide satisfactory returns. The odds shift dramatically when you start speculating.

Pitfall: Becoming a Know-It-All
There's an old axiom among the floor traders at every futures exchange: "The trader who is certain where the market is going has no business here, and won't be here long."

Overconfidence—whether based on some advisory service's "guaranteed formula," your own extensive research, or even the success of a well-planned hedging program—can encourage risk-taking and court disaster. No one knows for certain where the markets are going, or when.

Floor traders make money and then lose it. The speculator who writes a book on how to make a million dollars in commodities may be broke before the book is published.

Even one of the major grain companies lost more than $80 million in one 3-month period a few years ago (primarily in cash market commitments) because it misjudged the soybean market.

Paul says that futures prices at any given time reflect all that is known and all that is expected on the value of commodities being traded. This is why a bearish crop report is often followed by a price increase—because the traders had expected an even more bearish report than they got.

In other words, you should always assume that any information that comes your way has already been analyzed and acted upon by other traders who devote 100 percent of their time to futures markets.

But while "professional" traders may have faster access to a more complete picture of the overall supply and demand situation, you probably know the production situation in your own area more intimately than anyone outside that area. So your comparative advantage is in hedging your own risks, judged in light of your own costs, Paul says.

Pitfall: Trading Without a Plan
Futures markets move rapidly and often erratically. Without a trading plan, the hedger may get caught up in the psychology of the moment and risk serious mistakes. That's why a trading plan is one of the keys to success.

The basic outline of a trading plan, for example, might be your decision to hedge the first half of your crop at Price X, which will cover your variable costs—items such as seed, chemicals, fertilizer, and fuel. Then your plan might call for hedging another 10 percent with each 10-cent rise in price until 90 percent of the crop is priced.

However, the additional amount you hedge should also be geared to the progress of your crop, so that you will not have hedged more than your likely production—a timely caveat in light of this year's drought.

Your trading plan has to be tailored to your individual production costs, your cash flow needs, your profit goals, and your willingness to take risks. But without a plan, you may miss a good opportunity or seize a poor one that should have been let go.

Pitfall: Snubbing the Plan
Trading plans are no help when hedgers don't follow them. Then they're in the same dangerous position as those trading without a plan.

Of course, if circumstances change enough, you may need to draw up a new trading plan, but your plan should generally be comprehensive enough to cover most foreseeable situations.

The initial hedging program should be based on a thorough study of the futures market, basis relationships, costs, delivery possibilities, historic price patterns, and so on. Many commodity brokerage firms can provide free information and advice.

Pitfall: Neglecting the Banker
Margin calls need not hold any terror for the hedger who is backed by a knowledgeable lender.

In the first place, a margin call (where the hedger has to put up more cash to maintain the required percent of the current value of contracts held) will come only if the market is moving against the hedge—which means the chance of getting margin calls should not be more than 50 percent.

If the hedger has predicted price movements correctly, prices will be moving favorably and the hedge account with the broker will be growing.

If not, virtually all of the margin money put up will come back to the farmer when the hedge is lifted anyway, so a hedger backed by a good lender need only worry about the interest on the margin money rather than the lump sum. (For larger accounts, the hedger can even put up Treasury bills, which can continue to draw interest.)

The most important thing is a commitment that the lender will stay with the hedge—finance any margin calls—until it is lifted. The worst thing is for a hedger to get a big margin call, and then have the lender force the hedge to be lifted prematurely.

With a knowledgeable lender who's agreed to support your hedging program, that risk is unnecessary.

Is it fair that the spouse's first contact with hedging should come when the phone rings for a margin call?

Pitfall: Sparing the Spouse
Hedging is a complex matter. Most farmers spend a good deal of time drawing basis charts, doing "paper trades," going to seminars, and talking with brokers, advisory services, and lenders before they actually attempt to place a hedge.

Is it fair that the spouse's first contact with hedging should come when the phone rings for a margin call? Your spouse should be involved from the beginning, studying hedging right along with you to fully understand its place in your farm management plan.

Pitfall: Straying into Delivery
Experienced hedgers usually avoid delivery periods. That's when a big share of the problems in futures markets occur.

If there are problems of an adequate deliverable supply of the commodity, the delivery period is when they'll show up. The same is true for any transportation difficulties. Most market manipulation cases brought by government regulators over recent years have resulted from activities during delivery periods.

Fortunately, in most markets, it isn't necessary to hold a hedge into the delivery month. In fact, since the average producer isn't likely to make money through the futures delivery process, there is little reason for most farmers to hold their contracts into this precariously volatile period (see October 1980 *FARMLINE*).

It's much better strategy to place a hedge on contracts expiring a month beyond the time when you expect to sell or buy the cash commodity you are hedging. Or you can roll over your hedge into a more distant month before delivery time.

Some experts watching the live cattle market recently say that producers may have to hold into the delivery period to get good convergence of cash and futures prices.

If this continues to be true, hedgers should approach the delivery period warily, laying careful plans to either deliver their own animals (assuming the animals meet contract requirements and can be delivered) or someone else's. That way they won't get caught with unexpected delivery costs.

Pitfall: Not Shopping Around
A wide variety of services are available to help farmers with their hedging programs—with wide variations in prices and quality. You should shop around to find the services that meet your needs at the lowest cost.

The traditional commodity broker provides both advice on trading and execution of trades (though hedgers may not be a broker's favorite clients because they usually don't have much trading volume).

On the other hand, many commodity advisory services divorce themselves from execution of trades, while some discount brokers only offer the trading function. Similarly, some services are local, some long distance.

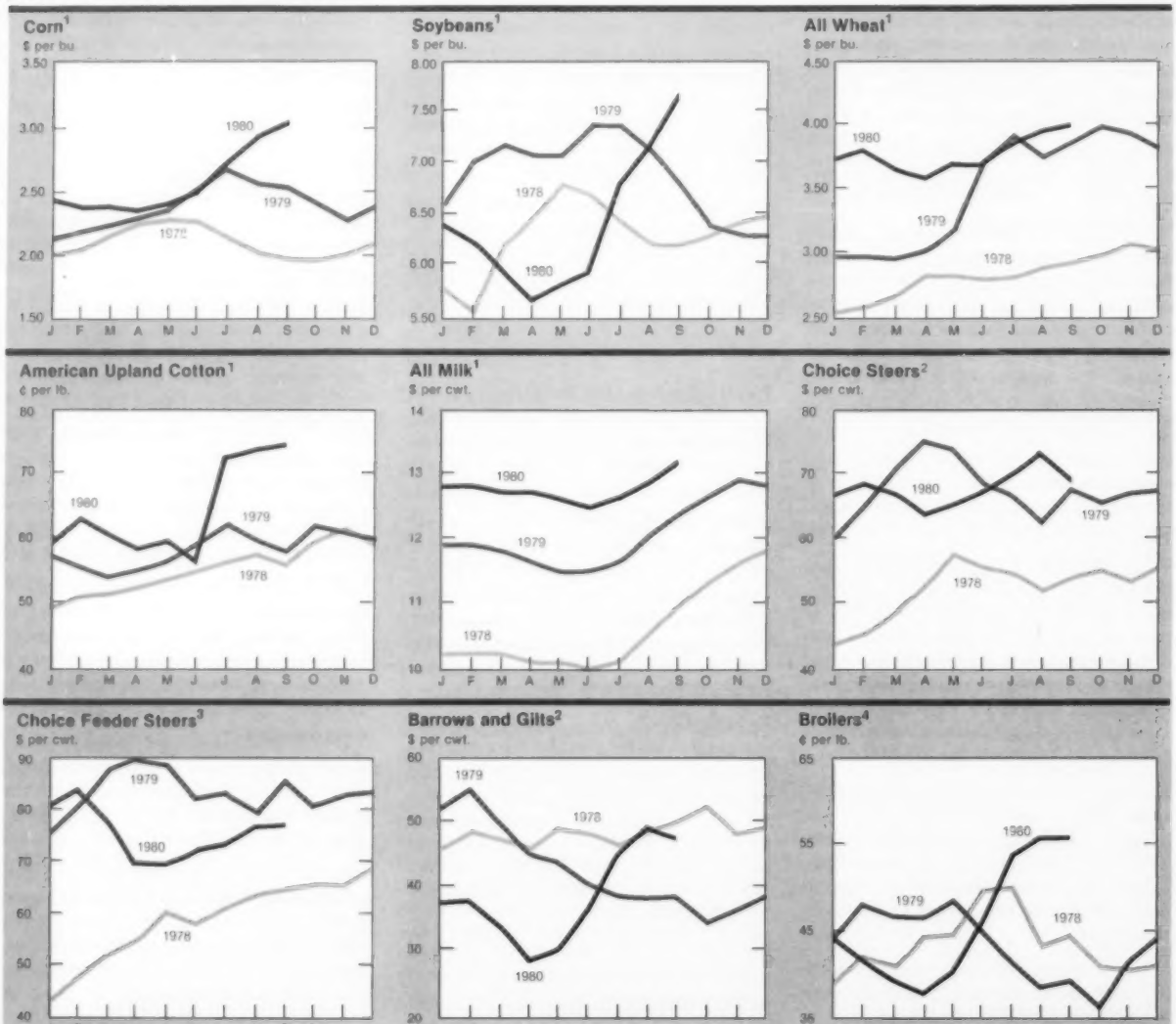
Beyond that, publications, news tickers, chart services, and a host of other trading aids are designed to help farmers hedge.

Your state extension service may have or know someone who can answer your questions. Then you need to pick the set of services which make you comfortable, and which meet your trading needs and your cost guidelines.

Farmline Trends

Monthly Price Monitor

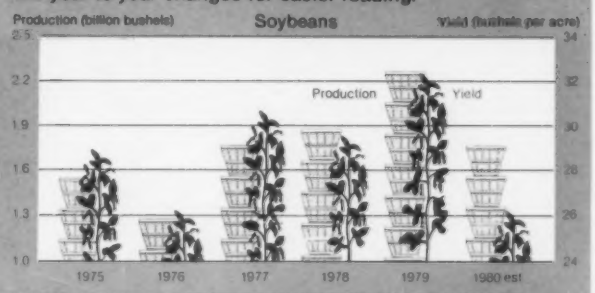
Farm prices for corn, soybeans, wheat, cotton, and milk all rose from August to mid-September. The U.S. average corn price broke the $3.00 barrier for the first time since January 1975, while cotton set a 20th Century record. Soybeans, at $7.69 per bushel, haven't been as high since June 1977. In livestock, prices of Omaha Choice steers and barrows and gilts slipped while Kansas City feeder cattle prices increased from August to September. New York broilers appeared to level off, though daily prices hit $61.50 at the end of September.



[1]U.S average prices received by farmers. Prices for the latest month are mid-month averages. [2]Omaha. [3]600-700 lbs., Kansas City. [4]Wholesale, New York.

Top Crops Watch

By all indications, the 1980 harvest of the nation's top two cash crops is coming in far short of last year as expected. The Crop Reporting Board's October assessment puts corn and soybean production down 17 and 23 percent, respectively, from 1979's record levels. Summer's heat and drought helped slash U.S. corn yields 18-19 bushels an acre and soybean yields an estimated 6 bushels. Here are the production and yields of both crops for the last few years—we've focused only on the range of variation to exaggerate the year-to-year changes for easier reading.

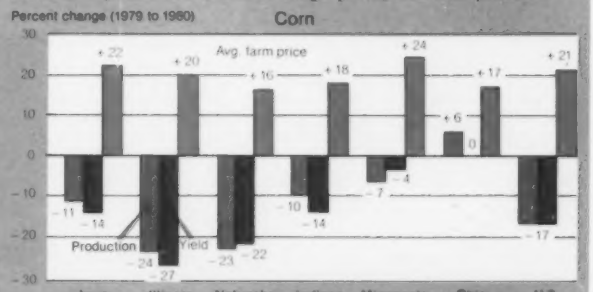


Here's what's expected in the top six corn-producing states, which will account for about 70 percent of this year's total U.S. corn crop. Only Ohio will maintain 1979's yield and produce a record harvest. Farm prices are running much higher than last year in all the states.

	Production (million bu.)		Yield (bu. per acre)		Average farm price ($ per bu.)	
	1980[1]	1979	1980[1]	1979	Sept. 1980[1]	Sept. 1979
Iowa	1,439	1,626	109	127	$2.87	$2.36
Illinois	1,039	1,358	94	128	$3.15	$2.62
Nebraska	612	794	90	115	$2.83	$2.45
Indiana	595	664	96	112	$3.12	$2.64
Minnesota	566	606	96	100	$2.78	$2.24
Ohio	443	417	115	115	$3.15	$2.70
U.S.	6,467	7,764	91	109	$3.03	$2.51

[1] Production and yield forecasts for 1980 are based on yield surveys taken about October 1, 1980. September 1980 farm prices are preliminary midmonth figures.

...And here are the same figures translated into 1979-to-1980 percent changes in each state's corn output, yield, and September farm price. Compare these with the changes in total U.S. production, U.S. average yield, and U.S. price.

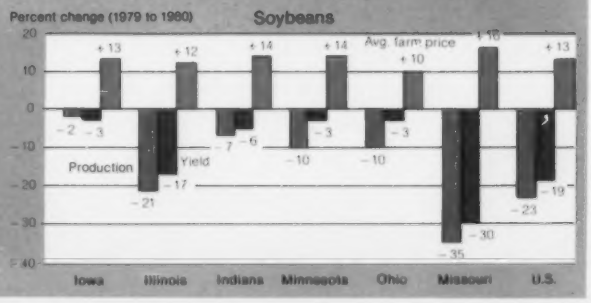


The top six soybean-producing states, which will provide about 65 percent of this year's crop, are all facing yield and production declines—some worse than others. But prices are up for farmers with soybeans to sell.

	Production (million bu.)		Yield (bu. per acre)		Average farm price ($ per bu.)	
	1980[1]	1979	1980[1]	1979	Sept. 1980[1]	Sept. 1979
Iowa	305	310	37.0	38.0	$7.52	$6.66
Illinois	296	374	32.0	38.5	$7.82	$6.96
Indiana	148	159	34.0	36.0	$7.80	$6.82
Minnesota	146	163	31.0	32.0	$7.36	$6.47
Ohio	132	147	35.0	36.0	$7.75	$7.07
Missouri	121	187	22.0	31.5	$7.82	$6.75
U.S.	1,757	2,268	26.1	32.2	$7.69	$6.81

[1] Production and yield forecasts for 1980 are based on yield surveys taken about October 1, 1980. September 1980 farm prices are preliminary midmonth figures.

...Here's how each state's soybean production, yield, and price changes compare. A 30-percent drop in yield leaves Missouri with the sharpest production decline of the six.



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